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may invite his neighbors to help him make a clearing, but this practice is infrequent.

All the above crops, except maize, are planted together in the same cleared plot. Manioc plants, which are the largest in the garden, are spaced slightly less than two yards apart throughout, with the smaller plants between them. A line of plantain and banana trees separates the garden from the forest.

Crop planting is done with two aboriginal tools and the machete. The former are a sharp-pointed planting stick thrust into the soil to make seed holes, and a flat-bladed palm wood digging stick used as a lever to excavate holes for planting and digging up manioc and other tubers and corms. The machete also functions as an excavating tool in planting.

Times of planting and harvesting overlap and thereby assure a constant reaping of agricultural staples. Sweet potato, *papa china*, and Araceae species are planted at any time of the year. Sweet potato and *papa china* mature in about six months, while the Araceae tubers and the carrot-like *maya* require a year. Plantain and banana are planted during a full moon at any time of the year, and are harvested twelve to fifteen months later. "White" maize and peanuts are usually sown semiannually at the blooming of the *lutsi* flower, maize maturing in seven months, the other crop in five.

The most important crop, sweet manioc, is planted and harvested daily in the same act. As the women dig up the manioc tubers, they place several cuttings from the same plant's stalk in the old hole and partially cover them with earth. Manioc matures in ten to twelve months, but the actual harvesting can, if desired, be delayed as much as an additional year. This continual replanting of the manioc crop on a year-round basis, as the individual plants are dug up, is an important factor in the reliability of Jivaro crop production. Thus the Jivaro, in a real sense, "store" much of

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tamed, both for personal amusement and for trade to the western or frontier Jívaro to obtain steel machetes, axe-heads, firearms, and ammunition.

Technology and Crafts

No single tool can be considered more ubiquitous in Jívaro life than the machete. The machete is the sole garden weeding implement as well as the only tool used for digging up root crops including the staple food, sweet manioc. It is used for woodworking, to dig clay for pottery, to prepare foods and to cut hair, and it is used to fell even the largest tree, although the less common steel axe is preferred for this task when it is available.

Machetes are of two types: the more plentiful *hapa mačit* ("deer machete"), of Ecuadorian manufacture, which was formerly obtained at Macas in exchange for one deer carcass; and the *kayenu mačit* (Colins machete), of North American manufacture and preferred by the Jívaro because of its superior efficiency. The *hapa mačit* was introduced first, the Collins implement not reaching the Jívaro until about 1941. During the past few decades, large single-bitted steel axe heads have also been introduced in significant numbers by means of a system of Jívaro trading partners. Such axes are still far less plentiful than machets, but in great demand because of their superiority over machetes in felling trees. Iron adze blades, which were apparently introduced about the same time as machetes, are possessed by only a very few individuals, but are in demand for finishing canoes and stools. All the types of steel tools are mainly obtained by trade from the western or frontier Jívaro of the Río Upano Valley.

As machetes become worn through years of continual use

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412 and lose their handles, they are relegated to purely culinary tasks. The steel blades are so highly valued, however, that they continue to be used even when worn down to mere stubs. Such stubs are broken into small triangular pieces and then used as knives for whittling blowgun darts and for performing other small cutting jobs. Wooden objects made with the
322 machete are characteristically simple but well made, although
532 a few carved embellishments resembling reptile heads may be seen as the handles of stools and mortar boards, and as the tips of house posts and the prows of dugout canoes.

321 The machete is the basic tool used in manufacturing ob-
[534] jects from bone and the shells of large land snails, the latter material being utilized primarily for women's dance belt rat-
[413] tles. Bone work is limited to making needles from monkey
[415] leg bones and carving gunpowder containers of cows' horns
[389] traded from the frontier Jívaro.

412 Non-ferrous cutting tools are nowadays only rarely em-
[844] ployed. A sharp-edged strip of bamboo is used to cut the umbilicus of a new-born infant; and sometimes a hardwood
[244] weed-cutting "machete" is used in garden work when there is no steel one available. Otherwise steel tools dominate the processing of materials.

413 The tip of a machete or machete fragment serves as a
[294] boring tool, awls being unknown. Men sew the fringes of
[415] garments and make knotless netting bags with the aid of monkey bone needles. A few possess large steel needles for the
[291] same purposes. Women use bone or steel needles, or a frag-
[294] ment of a blowgun dart, to pin their dresses (*tarači*) over one shoulder (see Plate 4).

415 Wooden mortar boards and pestles are utilized in mashing
[252] the fruit of the chonta palm to prepare a special beer, to mash
[273] peanuts, and to crush a mixture of salt and hot pepper (see
[235] Plate 7). The same wooden board is used with a crude rocker-

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2. Side view of a Jívaro house and its surrounding garden (upper Río Yuquipa region, 1956–57).

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When this first *tsantsa* feast is concluded, the head-takers return to their separate homes and begin to make preparations for the two subsequent feasts which each of them will host individually. Since enormous quantities of beer and food are consumed at these celebrations, the head-taker normally has to clear additional garden space for his wife or wives to plant to assure an ample supply of manioc. The first of these two celebrations, named *suamak*, normally takes place no sooner than after a year, to allow time for garden clearing and the growth of a large mature crop of manioc as well as for the raising of pigs to help provide meat for the feasting. Also the host may delay the celebration in order to build a new, larger house more worthy of the occasion. Thus, often two or three years pass before a man gives the feast.

To assure a large quantity of wild game for the feast, men who are close relatives of the host separately go hunting long distances from the house for a period of approximately nine or ten days before the opening day. Lacking any mnemonic system for keeping count of the days accurately, they are able to time their return to coincide with the arrival of the guests at the feast with the aid of an ingenious device which might be called a "banana clock." That is, the host gives each hunter a green cooking banana or plantain from the same stalk, which is one of those hanging in the house to ripen for the feast. When each of the hunters' plantains is almost fully ripe, they know that it is time to return for the celebration. The host also sends or delivers plantains from the same stalk to those invited guests living at some distance so that they, too, will arrive at the same time.

The celebration lasts five days and is followed, about a month later, by the third feast (*napiy*). This is the largest of all, with the head-taker supplying food and drink for six days. He must be able to provide plentifully for all his guests or the